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Agriculture.

Annual report, Delaware Agricultural Extension Service, December 1, 1938-November 30, 1939. Newark, Delaware, 1940. 22p. University of Delaware agricultural extension service. Bulletin no.32.

Fifty-second annual report of Purdue university, Agricultural experiment station for the year ending June 30, 1939. Lafayette, Ind., 1940. 142p.

Museum of science and industry opens agricultural exhibition. Farm Implement News. v.61, no.22. October 31, 1940. p.28. Exhibits designed to show by lecture-demonstrations and operating machinery scientific principles and production methods of important industrial processes. Extensive exhibitions in fields of geology and mineral industries, power, transportation, graphic arts, agriculture, civil engineering, chemistry, physics, and medical sciences on display. Agricultural exhibition will feature hybrid corn and development of agricultural machinery.

Our changing farm map. By Harry R. O'Brien and R.I. Throckmorton. Country Gentleman. v.110, no.10. October 1940. p.7-8,26.

Report on the agricultural experiment stations, 1939. By J.T. Jardine and F.D. Fromme. Washington, D.C.,U.S. Govt. print. off., 1940. 265p. U.S. Dept. of agriculture, Office of experiment stations.

Serving New Hampshire farms and homes. Annual report of the Director of the New Hampshire Cooperative extension service for the year 1939. Durham, N.H., University of New Hampshire Extension Service, 1940. 27p. University of New Hampshire extension service. Extension bulletin no.58.

Air Conditioning.

Air conditioned apples. Control of temperature and humidity with blower coils. By F.W. Swan. Refrigerating engineering. v.40, no.2. August, 1940. p.78-80,116.

Attic fans. Ohio state university. Engineering experiment station news. v.12, no.4. October 1940. p.40-41. Cut shows typical attic fan installation.

Psychrometric Chart: Its application and theory. By William Goodman. Heating, Piping and Air Conditioning. v.12, no.7. July, 1940. p.431-433.

Psychrometric chart: Its application and theory. By William Goodman. Heating, Piping and Air Conditioning. v.12, no.8. August 1940. p.486-488.

Air Conditioning. (Cont'd).

Summer cooling load as affected by heat gain through dry, sprinkled and water covered roofs. By F. C. Houghten, H.T. Olson, and Carl Gutberlet. Heating, Piping and Air Conditioning. v.12, no.7. July, 1940. p.451-458. Paper deals with variations in heat flow through roof as affected by surface finish and by sprinkling or flooding during summer heat when space below is cooled and air conditioned.

Sunshine is wonderful---outdoors. By Les Avery. Heating, Piping and Air Conditioning. v.12, no.8. August,1940. p.477-479. Reports study of one method of reducing solar heat through windows.

Building Materials.

Asbestos siding application methods for long life. By J. Harold Hawkins. American Builder. v.62, no.9. September 1940. p.47-49. Uses of asbestos products in different types of building projects.

Building materials and structures. Report BMS58. Strength of soft-soldered joints in copper tubing. By Arthur R. Maupin and William H. Swanger. Washington, D.C., U.S. govt. print. off., 1940. 25p. Issued by National Bureau of standards, United States Department of commerce. Selected references: p.25.

Building Construction.

How to anchor against storm damage. By J.A. Newlin. American Builder. v.62, no.9. September 1930. p.45,103.

Investigation of steel rigid frames. By Inge Lyse and W. E.Black. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1571-1601. Tests on two riveted-steel, rigid-frame models (scale, ¼ to 1) are described. In one frame, knee sections were approximately square, having sharp reentrant angle at inner corner. Other frame had large circular fillet at inside corner of knee. Frames were tested chiefly as two-hinged structures under working loads. In general, structural behavior of two rigid frames was in accordance with conventional theory. At knees of both frames, however, normal stress distribution departed markedly from usual straight-line relationship. In square knee, concentration of stress existed at inner corner but was found to be of minor importance. In curved knee, compressive stresses in flange of curved fillet were considerably greater than those computed by either straight-beam or curved-beam theories. Furthermore, transverse variation of stress in outstanding legs of curved flange angles increased high compressive stresses in curved knee. On basis of test results, recommendations for analysis and design of each type of rigid frame have been made and are presented.

Theory of elastic stability applied to structural design: Discussion. By Louis Balog. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1713-1720.

Castor Beans.

Agricultural engineering aspects of castor bean production. By Harry Miller. Agricultural engineering. v.21, no.10. October 1940. p.391-392. Cultural practices. Processing for oil and fiber.

Chemistry, Technical

What chemurgy means to the farmer. By Eugene M. Poirot. Farmers digest. v.4, no.4. August 1940. p.29-32. Chemurgy means a non-food and non-soil-depleting market for an agriculture that is geared to a production in terms of land, machinery, and men far beyond present food needs. That agriculture needs such a market so that its lost fertility may be recovered and its safe base of abundant production maintained goes without question. That such production approaches a permanence not found in other sources of raw materials is a chemical fact of great economic importance.

Concrete.

Recommended practice and standard specifications for concrete and reinforced concrete: Discussion. By John C. Sprague, and Walter R. Knot. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1710-1712.

Conservation of Resources.

Conserving our greatest asset - man power. By W. E. Mitchell. Edison Electric Institute Bulletin. v.8, no.10. October 1940. p.457-462.

Corn.

Corn in the development of the civilization of the Americas: A selected and annotated bibliography. Compiled by Louise O. Bercaw and others. Washington, D.C., 1940. 195p. U.S. Bureau of agricultural economics. Agricultural economics bibliography no.87.

Cotton.

Cotton linters; selected references in English, 1900-July 1940. Compiled by Emily L. Day. Washington, D. C., U. S. Dept. of agriculture, Bureau of agricultural economics, Library, 1940. 39p. mimeographed. Agricultural economics bibliography no.88.

Cotton quality statistics, United States, 1939-40. Washington, C.C., U. S. Department of Agriculture, Agricultural marketing service, 1940. 71 p. processed.

Cotton Gins and Ginning.

How do you figure power costs? By Orville Adams. Cotton and Cotton Oil Press. v.41, no.21. October 12, 1940. p. 5-6.

Operation and care of gin saw sharpening machinery. By Charles A. Bennett, and Francis L. Gerdes. Cotton ginners' journal. v.12, no.2. November, 1940. p.5-6.

Research in high density packing at gins. By Charles A. Bennett, and Francis L. Gerdes. Cotton and cotton oil press. v.41, no.15. July 20, 1940. p.5-6.
In light of uncertain history and indefinite facts available, U.S. Department of Agriculture has undertaken comprehensive study of methods, costs, and problems involved in packaging and compressing cotton in United States. Studies are bing conducted on cottons covering wide range of conditions and qualities in order to ascertain factors which might be responsible for fiber damage during compression, with ultimate view toward development of means to eliminate any such damage. In order to completely embrace all phases of investigations, co-operating bureaus have set up as their objectives to ascertain (1) engineering and mechanical feasibility of packaging cotton in high-density 500-pound bales at gins; (2) comparative costs and advantages of high-density gin compression as compared with customary procedures of gin packing and recompressing; (3) effect of high-density gin compression on spinning value of cotton; (4) requirements for high-density gin bale package satisfactory for preserving quality of cotton and for all purposes of transportation; (5) relative costs of packaging, handling, storage, and shipment of cotton in bales of various weights; (6) mechanical and economic feasibility of providing equipment at gins and for operation of gins to assure packing of each bale with cotton of uniform quality.

Crops (Drying).

Crop drying. Electrial Review. v.127, no.3274. August 23, 1940. p.145-146. Increased use of electrical methods.

Drying corn crops in the field. By H. C. Long. Country Life. (London) v.88, no.2273. August 10, 1940. p.127-128.

Dairy Products.

Advances in sanitary milk production in California. By J. D. Long. Agricultural engineering. v.21, no.10. October 1940. p.398,405.

Dams.

Cavitation in outlet conduits of high dams. By Harold A. Thomas and Emil P. Schulcen. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1623-1658. Occurrence of severe cavitation damage to concrete surfaces of outlet conduits of Madden Dam, in Panama Canal Zone, supplied incentive to carry on extensive studies by means of laboratory models to investigate cavitation potentialities, if any, in the conduits of Tygart River Dam, near Grafton, W. Va., and to develop methods of eliminating or minimizing future damage to conduits of Madden Dam. Similar studies, on a less elaborate scale, were conducted in connection with design of Bluestone dam in West Virginia, Hiwassee Dam in North Carolina, and Redbank Creek Dam in Pennsylvania. Development of cavitation-testing facilities of two types, known respectively as "enclosed-tank apparatus" and "diverging-tube apparatus", is described, and hydraulic theory pertinent to making cavitation tests in these facilities is presented. Description is given of cavitation studies conducted on models of conduit entrances of Madden dam.

Fitting rolled earth dams to local materials. Recognition of functional possibilities of nearby quantities may permit economies of haul or yardage and may improve stability. By B. K. Hough, Jr. Civil engineering. v.10, no.11. November, 1940. p.689-692. In building rolled earth dams, full advantage may well be taken of behavior of seepage by utilizing section above saturated zone to absorb random materials. Together with contraction of classified sections, this reduces field control problem as well as hazard of shortages. Introduction of interior drainage also promises to be effective in reducing wave damage.

How to tie down a sand dune. By Fred J. Sykes. Land Policy Review. v.3, no.6. October 1940. p. 14-17. Discussion of project to build $14,000,000 dam and reservoir, 14 miles long, to irrigate large area in western Kansas and eastern Colorado, to control floods, and to regulate run-off of Arkansas river.

Dams. (Cont'd.)

Masonry dams. A symposium: Discussion. By Berlen C. Moneymaker, A. Warren Simonds, and W.J.E. Binnie. American Society of Civil Engineers. Proceedings. v.66, no.9. November 1940. p.1697-1709.

Reservoirs and dams. Engineering News Record. v.125, no.21. November 21, 1940. p.688-692. Article deals with physical, hydrological and geological characteristics of watersheds, and also gives design of Merriman dam. This dam is rolled earth structure with caisson cutoff walls.

Timber facing prevents dam leakage. By Paul Baumann. Engineering News Record. v.125, no.21. November 21, 1940. p.683.

Drainage.

Drainage requirements of crops. By P.W. Manson. University Farm, St. Paul, 1940. 1p. University of Minnesota, Agricultural extension division, Agricultural engineering news letter. no.102.

Drainage souterrain. By Ulric Jean. Bulletin des agriculteurs. v.26, no.9. September, 1940. p.20. Underground drainage. Some suggestions on placing of drains.

Electricity in the home.

Study of electric roasters. By P.B. Potter and Evelyn C. Neale. Blacksburg, Va., 1940. 30p. Virginia agricultural experiment station. Bulletin no.325.

Electricity on the farm.

Power from small streams. By C.A. Crowley. PartII: Installing the headwork, penstock, turbine, generator, switchboard- how to start and stop the plant. Popular mechanics magazine. v.74, no.4. October, 1940. p.627-630.

Electromagnets.

Design of shading coils for alternating-current electromagnets. By Leonard A. Doggett and Franz S. Veith. State College, Pa., 1940. 24p. Pennsylvania. Engineering experiment station. Bulletin no.52.

Engineering.

Concept of engineering- a development of the eighteenth century. By W. E. Howland. Civil engineering. v.10, no.11. November, 1940. p.711-714.

Erosion.

Rain simulator studies of the effect of slope on erosion and run-off, 1938. By H.L. Borst and Russell Woodburn, Washington,D.C., U.S. Dept. of agriculture, Soil conservation service, 1940. various paging. mimeographed. Northwest Appalachian Soil and Water Conservation Experiment Station, Zanesville, Ohio. Literature cited: p.[31-32] Preliminary report.

Soil erosion. By Noble Clark. Madison, Wis., 1940. 24p. Wisconsin. College of Agriculture. Extension Service. Circular no.311.

Explosives.

Explosives - types and uses. By C. H. Blocher. Journal of the New England water works association. v.54, no.2. June 1940. p.191-193.

Farm Buildings.

Farm building plan service in Virginia. By C. D. Kito. Southern planter. v.101, no.11. November, 1940. p.34.

Farm shops. By W. F. Ackerman and R.U. Blasingame. Pennsylvania Farmer. v.123, no.9. November 2, 1940. p.14-15.

Safety bull pen. By L.A. Johnson and K.S. Morrow. Durham, N.H., University of New Hampshire Extension Service, 1940. 8p. University of New Hampshire extension service. Extension circular no.228.

Farm Machinery and Equipment.

Barn Machinery for grain. By W.H. Cashmore. Country Life. (London). v.88, no.2278. September 14, 1940. Adv. p.16. Farm-owned threshing machines and home milling plant.

Cost of using farm machines. By A.J. Schwantes. Northwest farm equipment journal. v.54,no.9. September, 1940. p.33-34. How to determine costs. Depreciation. Interest. Repairs. Housing.

Cultivation after harvest. By S. J. Wright. Country Life. (London) v.88. no.2276. August 31, 1940. p.202, Adv. p.16.

Essentials of a pick-up. By George Innes. Implement and Tractor. v.55, no.23. November 9, 1940. p.17,53. Essentials properly demanded of pick-up in order of their importance are: 1.Must be effective in picking up all grain. 2.Must work continuously without causing delays due to wrapping. 3.Fingers must contact grain as gently as possible to avoid threshing by tossing or striking and to lift it without interruption. 4. Must avoid as much as possible picking

Farm Machinery and Equipment. (Cont'd.)

up other substances such as stones or clods. 5. Speed of grain engaging parts must be uniform in every point of course. 6. Design must be simple. 7. Must not be cumbersome and heavy. 8. Must not be excessive in cost. 9. Must be conveniently attached and detached. 10. Must have accessibility for repair when replacing parts.

Farm implements and machinery. By S.J. Wright. Oxford, Alden press, 1939. 29p. Reprinted from the Journal of the Royal agricultural society of England, v.100, 1939. References: p.27-29.

From reaper to "combine". By W.L. Julyan. Country Life. (London) v.88, no. 2278. September 14, 1940. Adv. p.20.

Manufacture of agricultural machinery and international trade from 1929 to 1939. By H.J. Hopfen. Rome, Carlo Colombo, 1940. 98-118p. Reprint from the Monthly bulletin of agricultural science and practice, International institute of agriculture, Rome, no.3, March, 1940.

Mechanism in the cane fields. Report of the Committee on labour-saving devices, Hawaiian sugar planters' association, 1939. International Sugar Journal. v.42, no.499. July 1940. p.236-239.

Mechanization of heavy land. By T. Nellist Wilks. Journal of the Ministry of Agriculture. v.47, no.2. September 1940. p.83-87. Drainage. Power. Tracklaying tractors. Implements.

New ways of handling hay crops. Farmer (Saint Paul) v.58, no.12. June 15, 1940. p.7,13.

Progress in sugar beet machinery. By H.B. Walker. Through the leaves. v.28, no.5. September, 1940. p.203-204.

Reducing machinery costs. By Ira J. Markham. Utah Farmer. v.60, no.5. October 10, 1940. p.10,15.

Repairing farm machinery. By Ivan G. Morrison. Danville, Ill., The Interstate printers and publishers, 1940. 181p.

Silage conveyor. Electricity on the farm. v.13, no.9. September, 1940. p.9. illus. Silo conveyor plan of Puget Sound Power & Light co. research laboratory is reproduced.

Subsurface tillage becomes popular. Idaho Farmer. v.58, no.18. August 29, 1940. p.12.

Sugar-beet harvesting. By S.J. Wright and N.J. West. Journal of the Ministry and Agriculture. v.47, no.2. September 1940. p.120-122.

What implement manufacturers are doing to assist soybean growers. Cost-reducing machinery important factor in making greatly increased acreage possible and profitable. By F.A. Wirt. Better farm equipment and methods. v.13, no.1-2. September-October, 1940. p.4-7, 25-26. charts.

Farm Machinery and Equipment. (Cont'D)

Windrowing does it! Farmer (Saint Paul) v.58, no.12. June 15, 1940. p.7, 11. Combine harvester can be adapted to any condition.

Farmhouses.

One hundred years of farm housing. By J.R. Dodge. Southern planter. v.101, no.11. November, 1940. p.4, 18-19.

Fats and Oils.

Engineers in the production of essential oils. By Dr. Paul J. Kolachov. Agricultural engineering. v.21, no.10. October 1940. p.395-397.

Feeding and Feeding Stuffs.

Grass. Newest food for men. Popular mechanics magazine. v.74, no.4. October, 1940. p.509-511,147A-148A.

Fences.

Rustic cedar fences for garden enclosures and screens. American Builder. v.62 no.9. September 1940. p.58-59.

Fences, Electric.

Safety requirements for electric fences. Electricity on the farm. v.13 no.10. October, 1940. p.13-14.

Fertilizers.

Proceedings of the sixteenth annual convention of the National fertilizer association. Held at White Sulphur Springs, W.Va. June 3,4, and 5,1940. Washington, D. C., National Fertilizer Assoc., 1940. 95p.

Fire Protection.

Preventing farm fires. Utah Farmer. v.60,no.5. October 10,1940. p.14.

Flax.

Flax-management practices in Imperial valley, with world statistics. By Wallace Sullivan and others. Berkeley, California, 1940. 38p. California. Agricultural experiment station. Bulletin no.641.

Unretted flax. By Flamnen. Textile Recorder. v.61,no.690. September 1940. p.24. Brief outline of modern practice in production and processing of this material.

Floods and Flood Control.

Flood control in New England. By H.J. Woodbury. Military Engineer. v.32, no.186. November-December 1940. p.397-405.

Flood-protection data. Progress report of the Committee: Discussion. By Gordon R. Williams. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1723-1725.

Hurricane floods of September 1938. By Carl G. Paulsen. and others. Washington, D.C., 1940. 562 p. processed. U.S. Department of the Interior. Water-supply paper no.867.

Floods and Flood Control. (Cont'd.)

Transient flood peaks: Discussion. By Henry B. Lynch. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1665-1670.

Flow of Water and Gases.

Kaweah river flows, diversions and service areas. Prepared under cooperative agreements, dated September 30, 1939, between the Kaweah Delta Water Conservation District, Kaweah River Association and St. Johns River Association and the Division of water resources, Department of public works, State of California. Sacramento, Cal., California State print. off., 1940. 348p. California. Dept. of public works. Div. of water resources. Bulletin no. 49. Flood and diversion tables: p.29-342.

Foods, Frozen.

Freezing fruits and vegetables. By Alta C. Fox. Idaho Farmer. v.58, no.18. August 29, 1940. p.17-18. Factors determining satisfactory freezing of fruits and vegetables: 1. Low temperatures. 2. Varieties of fruits and vegetables. 3. Maturity of raw material used for freezing. 4. Handling of raw material prior to processing. 5. Preparation of fruits and vegetables prior to freezing. 6. Scalding of vegetables for frozen pack is absolutely essential.

Forestry.

Selected bibliography of North American forestry. By E.N. Munns. Washington, D.C., U.S. Govt. print. off., 1940 2 vol. U.S. Dept. of agriculture. Miscellaneous publication no.364.

Frost Protection.

Studies of frost penetration. By Harry U. Fuller. New England Water Works Association. Journal. v.54, no.3. September, 1940. p.275-281. Graphs. Frost penetration in gravel. Frost penetration in clay. Combination frost line. Relationship between air temperature and frost. Range in the severity of winters. Frost chart.

Fruits and Vegetables.

Origin of mechanical injuries to apples. By C.W. Ellenwood. Ohio. Agricultural experiment station. Bimonthly bulletin v.25, no.205. July-August 1940. p.115-118. Article summarizes results of observations made during harvest and storage season of 1939.

Fuels.

Better fuels for better engines. By William H. Hubner. S.A.E. journal. v.47, no.4. October, 1940. p.409-417. graphs. Paper reviews refiner's solution to problem from viewpoint of transportation and maintenance engineer, and discusses trends of major characteristics of gasoline, namely, volatility, antiknock quality, sulfur content, gum content, and chemical composition. It suggests that design of future engines will be in direction of units of smaller size, having higher

Fuels. (Cont'd.)

compression ratios, yielding higher power output and greater fuel economy, and requiring fuels of higher antiknock properties. Paper also describes composition of modern fuels and new refining methods of polymerization, catalytic cracking, catalytic reforming, and alkylation.

Chassis-dynamometer and road tests of alcohol-gasoline blends. By C.W. Phelps and L.C. Lichty. New Haven, Conn., Yale university, School of engineering, 1940. 24p. Yale university, School of engineering, Publication no.50. Reprint of article published in Proceedings, American petroleum institute, May 1939.

Gates.

Who left that gate open? Idaho Farmer. v.58, no.18. August 29, 1940. p.3. Gives plans.

Grain Storage.

Fumigating stored grain on the farm. By C.B. Dibble. East Lansing, Michigan State College, Extension Division, 1940. 1p. Michigan State college. Extension service. Extension bulletin 217.

Heating.

Air flow measurements at intake and discharge openings and grilles. By G.L. Tuve and D.K. Wright, Jr. Heating, Piping and Air Conditioning. v.12, no.8, August 1940. p.501-507.

Effect of room dimensions on the performance of direct radiators and convectors. By A.P. Kratz, M.K. Fahnestock, E.L. Broderick, and S. Sachs. Heating, Piping and Air Conditioning. v.12, no.7. July,1940. p.439-446. Paper is result of research sponsored by American Society of Heating and Ventilating Engineers and conducted at Engineering Experiment Station, University of Illinois.

Heating by reversed refrigeration. By A.J. Lawless. Heating, Piping and Air Conditioning. v.12, no.8. August, 1940. p.473-476. Explains principle of using reversed refrigeration cycle for heating. Describes such a job.

Heating by reversed refrigeration. By A.J. Lawless. Heating, Piping and Air Conditioning. v.12, no.9. September, 1940. p.519-521. Design, operation and control of reversed cycle system.

Radiant heating and cooling. By F.E. Giesecke. Heating, Piping and Air Conditioning. v.12, no.7. July, 1940. p.421-424. Explains fundamentals of design.

Radiant heating and cooling. By F.E. Giesecke. Heating, Piping and Air Conditioning. v.12, no.8. August 1940. p.484-485. Tells how to figure amount of heat delivered by ceiling, wall or floor heating panel and presents rule for this calculation. Concludes with explanation of figuring size of pipe coil needed and shows example of calculation of ceiling panel coil.

Heating. (Cont'd.)

Radiant heating and cooling. By F. E. Giesecke. Heating, Piping and Air Conditioning. v.12, no.9. September, 1940. p.527-528. How to design a floor coil heating panel and how to figure pump capacity.

Radiant heating and cooling. By F. E. Giesecke. Heating, Piping and Air Conditioning. v.12, no.10. October, 1940. p.589-590. Warm air type of panel heating analyzed, and other types of installations described.

Hydraulics.

"Pocket" hydraulics laboratory. William L. Blankenburg. Engineering news-record. v.125,no.11. September 12, 1940. p.337-339. Compactness and flexibility distinguish new hydraulics laboratory at Washington University. Pumping equipment, consisting of two small centrifugal units, has been ingeniously connected with pipes, tanks and multiport cone valves to secure many variations of flow conditions. One of the special features of the laboratory is the friction pipe rack and measuring devices.

Trend in Hydraulic turbine practice: A symposium. Discussion. By K. W. Beattie. American society of civil engineers. Proceedings. v.66, no.7. September 1940. p.1373-1378.

Trend in hydraulic turbine practice. A symposium: Discussion. By I. A. Winter, and L. M. Davis. American society of civil engineers. Proceedings. v.66, no.9. November, 1940. p.1659-1664.

Hydrology.

Hydrological studies on the Yangtze river, China, V.On the variations in stage of the Yangtze river at Hankow and some climatic changes in central China infered from them, II. By Shoitiro Hayami. Shanghai, China, Shanghai Science Institute, 1940. 263-291p. Separate print no.14, Journal of the Shanghai science institute, section 1, vol.1. In English.

Hydroponics.

What about soil-less culture now? By Ernest Chabot. Rural New Yorker. v.99, no.5488. October 19,1940. p.542,547. Sketch shows how time switch, pump, and overflow are arranged in gravel culture bench. Ordinary plant benches may be adapted for soil-less culture by making them waterproof with tar paper and asphalt emulsion.

Insulation.

Insulation of Piping. By E.T. Cope and W.F. Kinney. Heating, Piping and Air Conditioning. v.12, no.9. September, 1940. p.524-526. Summary: Study of heat insulation problems in steam power plants resolves itself into consideration of convenience of application, cost of construction, and permanence as related to installations on furnace walls, ducts, fan housings, piping for hot and cold fluids and steam turbines. Certain problems are encountered in producing economical, permanent and neat installation---for some, satisfactory solutions have been reached, with others progress has been made, and still others exist that have been recognized only recently. Describes some unusual techniques of installation.

Irrigation.

ABC of irrigation. Oregon Farmer. v.63, no.18. August 29, 1940. p.11. Part 3.

ABC of irrigation. Part 3. Idaho Farmer. v.58, no.18. August 29, 1940. p.11. Discusses ridge and bed system of irrigation.

ABC of irrigation. Oregon Farmer. v.63, no.19. September 12, 1940. p.10. Part 4.

ABC of irrigation. Part 5. Washington Farmer. v.65, no.20. September 26, 1940. p.7. Discussion of irrigation dams.

ABC of irrigation. Oregon Farmer. v.63, no.21. October 10, 1940. p.11. Part 6.

Administration report of the Irrigation branch of the Public works department, Central Provinces and Berar, for the year ending the 31st March 1939. Nagpur, India, Govt. Printing, C.P. & Berar, 1940. 43p.

Permissible composition and concentration of irrigation water: Discussion. By Leon D. Batchelor. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1721-1722.

Land Utilization.

Living and forest lands. Washington, D.C., 1940. 48p. U.S. Department of agriculture. Miscellaneous publication no.388.

Lighting.

Electric lights vs. good illumination. By Helen G. McKinlay. Electricity on the farm. v.13, no.9. September, 1940. p.6-9.

Lubrication.

Profits in tractor lubrication. Implement & Tractor. v.55, no.18. August 31, 1940. P.8,29. Stresses need of quality lubricants and clean handling.

Milk Houses.

Milkhouse for the wholesale producer. By M.G. Huber. Orone, Maine, University of Maine, College of agriculture, Extension service, 1940. 11p. University of Maine. College of agriculture. Extension service. Extension bulletin no.276. Tables I and II from Massachusetts Extension Leaflet 165, "Milkhouses."

Milkhouses for Wisconsin. By M.J. LaRock and S.A. Witzel. Madison, Wis., University of Wisconsin, College of agriculture, Extension service, 1940. 16p. University of Wisconsin. College of agriculture. Extension service. Circular no. 312.

Miscellaneous.

Fact and fancy - The social signifance of science. By Edward Ellery. Sigma Xi Quarterly. v.28, no.3. Autumn, 1940. p.98-102.

Family income and expenditures: Southeast region. Part I, Family income. By Dorothy Brady. and others. Washington, D.C., 1940. 389p. U.S. Department of Agriculture. Miscellaneous publication no.375.

Motors, Electric.

Care of electric motors. By D.T. Anderton. Brewers digest. v.15, no. 10.September, 1940. p.39. Economic operation of electric motors requires that their interior be thoroughly cleaned at regular intervals, that excessive brush pressure be avoided, that all necessary points be properly lubricated, and that continuous over-loading be prevented.

Motor, motor, who's got the motor? By Geo. W. Kable. Electricity on the farm. v.13, no.9. September, 1940. p.10-11.

Paints and Painting.

Eight-year test of aluminum primers on wood. By Robert I. Wray. Paint, Oil and Chemical Review. v.102, no.13. June 20, 1940. p. 7-9.

Magic of paint. By C.F. Greeves-Carpenter. Pennsylvania Farmer. v.122, no.8. April 20, 1940. p.5,15.

Pipes and Piping.

Piping flow problems made easy. By William Goodman. Heating, Piping and Air Conditioning. v.12, no.10. October, 1940. p.603-606. Presents single chart for determining pressure drop, pipe size or rate of flow for any fluid.

Pools.

How to build a garden pool for water plants and goldfish. American builder. v.62, no.8. p.63. August, 1940. Gives working drawings.

Poultry Houses and Equipment.

Home-made poultry equipment. By M.G. Huber and F.D. Reed. Orono, Maine, University of Maine, College of agriculture. Extension service, 1940. 8p. University of Maine. College of agriculture. Extension service. Extension bulletin no.278.

Production Costs.

Relative cost of hay-crop silage and corn silage. By F.L. Morison. Ohio. Agricultural experiment station. Bimonthly bulletin v.25, no.205. July-August 1940. p.122-123. Table gives total costs of producing and harvesting silages, 1939.

Pumps and Pumping.

Instructions for installing a centrifugal pump. By M.L. Murdock. Industrial Power. v.39, no.5. November 1940. p.54-57,88,90. Exact, practical and easy-to-follow instructions tell proper procedure for installing centrifugal pump. Diagrams show how to align pump, right and wrong ways to put in piping, and various ways to prime a pump.

One hundred years of pumping machinery. By S.W. Kitson. Journal of the New England water works association. v.54, no.1. March, 1940. p.103-142.

Quick Freezing.

Three methods of quick-freezing. Description and analysis of the spray, plate, and air blast methods of quick-freezing foods, and an explanation of their use. By Van Rensselaer and H. Greene. Air conditioning & refrigeration news. v.31, no.2. September 11, 1940. p.14.

Rainfall and Run-off.

Effect of contour cultivation on run-off. By H.C. Knoblauch and J.L. Haynes. Washington, D.C., U.S. Dept. of agriculture, Soil conservation service, 1940. 12p. mimeographed. Duplicated from Proceedings of the American geophysical union, 1940. References: p.11.

Reliability of station-year rainfall frequency determinations. By Katharine Clarke-Hafstad. American Society of Civil Engineers. Proceedings. v.66, no.9. November, 1940. p.1603-1622. Accuracy of rainfall frequency values should be considered carefully in design of flood and erosion control structures. Paper is concerned with factors affecting accuracy of rainfall frequency determinations. Method involving statistical test for persistence is suggested for estimating reliability of frequencies calculated by station-year method.

Sixty-year rainfall record analyzed. Results of calculations differ somewhat from those secured ten years ago using 50-year record of same gage at Boston. By Hugh F. Kennison. Civil engineering. v.10, no.11. November, 1940. p.709-710.

Reclamation.

Reclaiming the land. Part 4. Country Life. (London). v.88, no.2274. August 17, 1940. p.136-137.

Reclaiming the land. Part 6. By L.F. Easterbrook. Country Life (London) v.88, no.2279. September 21, 1940. p.265-266.

Reclaiming the land. Part 7. By S.L. Bensusan. Country Life (London). v.88, no.2281. October 5, 1940. p.304-305.

Refrigeration.

Specific heats of brines. By R.S. Jessup. Refrigerating engineering. v.40. no.2. August, 1940. p.100-101. tables.

Refrigerators.

So you're buying a refrigerator. Consumers' guide. v.6, no.17. p.6-9. June, 1940.

Research.

Age of opportunity. By C.F. Kettering. Popular mechanics magazine. v.74, no.4. October, 1940. p.497-504,129A. Ten great fields of research, Mr. Kettering says, hold promise of new jobs and improvements in living. They are: Adequate housing. A modern highway system. Preventives and cures for man's ills. Communications, including television. Air conditioning. Fundamental information in basic sciences of physics and chemistry. More knowledge of plant growth. Improved transportation systems. More efficient modern cities. Better knowledge of properties of materials, both natural and synthetic.

Closer inter-American relations in agricultural education and research. Experiment station record. v.83, no.3. September, 1940. p.289-292. Committee appointed at suggestion of Secretary of State and continuation committee of Conference on Inter-American Relations in the Field of Education. Its functions are announced as including following: "(1) To indicate to land-grant colleges keen interest that is felt in attention they give to Latin American situation through teaching of Spanish, making special provision for needs of Latin American students, etc.; (2) show that although there are already some schools that are interesting themselves in Latin American situation, there is still plenty of opportunity for others to serve; (3) point out particular advantages of various schools; (4) exchange ideas and stimulate interest in agricultural education, not only for students from Latin America but also young North Americans interested in Latin American field; and (5) explain aims of proposed Tropical Institute of Agriculture."

Industrial research in your own business. By Lewis W. Waters. Cambridge, Mass., Arthur D. Little, Inc., 1940. 3p. Reprint from Dun's Review, September, 1940.

Volumeter research. By Edgar E. Ambrosius and Howard S. Bean. Mechanical engineering. v.62, no.9. September 1940. P.677-681.

Sewage Disposal.

Sewage treatment & disposal for farm homes. By M.J. LaRock, S.A. Witzel and L.F. Warrick. Madison, Wis., University of Wisconsin, College of agriculture, Extension service, 1940. 15p. University of Wisconsin. College of agriculture. Extension service. Circular no. 309.

Silt.

Technical aspects of the silt problem on the Colorado River. By C.P. Vetter. Civil engineering. v.10, no.11. November, 1940. p.698-701. Handling silt brought into canals by water from Colorado River was long major operating problem of Imperial Irrigation District in California. With completion of All-American Canal and gigantic desilting works at its head, however, that problem is now solved. Discusses research and theory on which design of those desilting works

Silt. (Cont'd.)

was based. Studies undertaken dealt with broad subject of mechanics of silt transportation and the effects of Boulder and Parker dams on silt content downstream. Design principles for works themselves are also discussed, with instructive reference to preliminary designs that were investigated and found wanting.

Soil Sterilization.

Experiments with new electric devices for pasteurizing soils. By A.G. Nowhall. Ithaca, N.Y., 1940. 38p. Cornell university, Agricultural experiment station. Bulletin no.731.

Storage of Farm Produce.

Metal bins for corn storage on farms. Implement & Tractor. v.55. no.18. August 31, 1940. p.10,24.

Storage of grain and feeding stuffs. By W.H. Cashmore. Country Life (London). v.88, no.2274. August 17, 1940. p.156, Adv. p.16.

Textile drying.

Three years of textile drying research. By Albert C. Walker. Textile research. v.10, no.11. September, 1940. p.443-445,461. United States institute for textile research entered upon two-year program of textile drying research. Primary object was to secure information of fundamental nature which might be of value to industry at large and not necessarily directed towards solution of special problems for any one branch of tectile manufacture. Article is summary of information secured.

Textile fibers.

Japanese make synthetic fiber from soya bean. Yarns finished to resemble either silk or wool; lecithin used to prevent premature hardening. Science news letter. v.37, no.12. p.191. March 23, 1940.

Textile fiber atlas. By Werner Von Bergen. Rayon textile monthly. v.21, no.8. August 1940. p.469-472. Part 7 - Bast fibers.

Tin.

Tin -- An all-important strategic material. By W. A. Janssen. Domestic commerce weekly. v.26, no.8. p.139-144. September 12, 1940.

Tractors.

Care of farm tractor. By R.U. Blasingame. Pennsylvania farmer. v.123, no.7. October 5, 1940. p.141-142. Use rain water. Results of overheating. Radiator screen and shutter.

Care of farm tractors. By R.U. Blasingame. Pennsylvania farmer. v.123, no.8. October 19, 1940. p.171. Use the best. Water in crankcase. When to change oil.

Tractors. (Cont'd.)

Tractor safety rules approved by National Safety Board. Northwest farm equipment journal. v.54 no.9. September, 1940. p.30.

Ventilation.

Dairy barn ventilation. By M.G. Huber. Orono, Maine, University of Maine, College of agriculture, Extension service, 1940. 15p. University of Maine. College of agriculture. Extension service. Extension bulletin no.277.

Waste Products.

Extraordinary uses for ordinary products. By Emmett A. Chapman. U.S. Bureau of foreign and domestic commerce. Domestic commerce. v.26, no.18. November 21, 1940. p.303-305. Motor-fuel substitutes. Fodder and foodstuffs. Ersatz in industry.

Farm products and by products for industrial use. Washington, D.C., U.S. Dept. of agriculture, Bureau of agricultural chemistry and engineering, 1940. 69p. mimeographed. Prepared under the direction of W.W.Skinner, by the following committee, H.P. Holman, V.A. Pease, T.D. Jarrell, and C.E. Senseman, and A.B. Genung.

Waterproofing.

Waterproofing a brick tunnel. By Seymour A. Potter, Jr. Civil engineering. v.10, no.11. November, 1940. p.702-704.

Weeds.

Clean ditches pay dividends. By L.H. Mitchell. Through the leaves. v.28, no.5. September, 1940. p.192-195. Good management of irrigation system requires keeping banks of reservoirs, canals, and laterals free from useless plants, which consume valuable water and also may contribute to seepage water losses. Deep-rooted plants like sweet clover, wild morning glory, and willows not only pump water out of moist soil, and indirectly from canal, but also loosen soil in canal banks, thus increasing seepage losses. And weeds along banks of any water course drop their seeds into water to find easy transportation to farm ditch-banks and fields.

Welding.

Definitions of welding terms. Heating, Piping and Air Conditioning. v.12, no.8. August, 1940. p.472. These definitions of welding terms have been taken from standard prepared by committee on definitions and chart of American Welding Society and approved recently by executive committee of Society as "tentative." They were published in full in Welding Journal of AWS (April, 1940) and excerpts given are reproduced by permission of Society.

Wood.

Gluing of wood. By T.R. Truax. Washington, D.C.,U.S. Govt. print. off., 1940. 78p. U.S. Dept. of agriculture. Department bulletin no.1500. Literature cited: p.75-77.

Inspection of wood. By W. Elwood Rossnagel. Power Plant Engineering. v.44, no.10. October 1940. p.75. Part 1.

Transverse heat conductivity of wood. By Frederick F. Wangaard. Heating, Piping and Air Conditioning. v.12, no.7. July, 1940. p.459-464. Purpose of investigation has been to ascertain relationships which may exist between heat conductivity of wood in general and various influences affecting this property rather than to study large number of tree-species. Such approach formulates basic relationships applicable to all woods and, at same time, permits evaluation of those influences which characterize wood of any given species.